



## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 25

[Docket No. FAA-2021-0582; Special Conditions No. FAA-2021-0582-F]

#### **Special Conditions: Archeion Holdings, LLC, Boeing Model No. 777-200/-200LR/-300/-300ER Series Airplanes; Electronic-System Security Protection from Unauthorized External Access**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final special conditions; request for comments.

**SUMMARY:** These special conditions are issued for the Boeing Model 777-200/-200LR/-300/-300ER Series Airplanes. These airplanes, as modified by Archeion Holdings, LLC (Archeion), will have a novel or unusual design feature when compared to the state of technology envisioned in the airworthiness standards for transport category airplanes. This design feature is a digital systems architecture for the installation of a system with wireless network and hosted application functionality that allows access from external sources to the airplane's internal electronic components. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

**DATES:** This action is effective on Archeion on [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]. Send comments on or before [INSERT DATE 45 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** Send comments identified by Docket No. FAA-2021-0582 using any of the following methods:

- *Federal eRegulations Portal:* Go to <http://www.regulations.gov/> and follow the online instructions for sending your comments electronically.
- *Mail:* Send comments to Docket Operations, M-30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, SE, Room W12-140, West Building Ground Floor, Washington, DC, 20590-0001.
- *Hand Delivery or Courier:* Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- *Fax:* Fax comments to Docket Operations at 202-493-2251.

*Privacy:* Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received without change to <http://www.regulations.gov/>, including any personal information you provide. The FAA will also post a report summarizing each substantive verbal contact received about this proposal.

*Confidential Business Information:* Confidential Business Information (CBI) is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this Notice contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this Notice, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and the indicated comments will not be placed in the public docket of this Notice. Submissions containing CBI should be sent to Varun Khanna, Airplane and Flight Crew Interface Section, AIR-622, Aircraft

Information Systems, Technical Innovation Policy Branch, Policy and Innovation Division, Aircraft Certification Service, Federal Aviation Administration, 2200 South 216th Street, Des Moines, Washington 98198; telephone and fax 206-231-3159; e-mail Varun.Khanna@faa.gov. Comments the FAA receives, which are not specifically designated as CBI, will be placed in the public docket for this rulemaking.

Docket: Background documents or comments received may be read at <http://www.regulations.gov/> at any time. Follow the online instructions for accessing the docket or go to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

**FOR FURTHER INFORMATION CONTACT:** Varun Khanna, Airplane and Flight Crew Interface Section, AIR-622, Aircraft Information Systems, Technical Innovation Policy Branch, Policy and Innovation Division, Aircraft Certification Service, Federal Aviation Administration, 2200 South 216th Street, Des Moines, Washington 98198; telephone and fax 206-231-3159; e-mail Varun.Khanna@faa.gov.

**SUPPLEMENTARY INFORMATION:**

The substance of these special conditions has been published in the *Federal Register* for public comment in several prior instances with no substantive comments received. Therefore, the FAA finds, pursuant to 14 CFR § 11.38(b), that new comments are unlikely and prior public notice and comment are unnecessary.

**Comments Invited**

The FAA invites interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data.

The FAA will consider all comments received by the closing date for comments. The FAA may change these special conditions based on the comments received.

## **Background**

On July 14, 2020, Archeion applied for a change to Type Certificate No. T00001SE for the installation of an Avionics avWIFI system with wireless network and hosted application functionality in Boeing Model 777-200/-200LR/-300/-300ER series airplanes. These airplanes, currently approved under Type Certificate No. T00001SE, are twin-engine, transport category airplanes, with a maximum takeoff weight between 535,000 lbs and 775,000 lbs pounds, and a maximum passenger capacity of 550 persons.

## **Type Certification Basis**

Under the provisions of title 14, Code of Federal Regulations (14 CFR) 21.101, Archeion must show that the Boeing Model 777-200/-200LR/-300/-300ER series airplanes, as changed, continue to meet the applicable provisions of the regulations listed in Type Certificate No. T00001SE or the applicable regulations in effect on the date of application for the change, except for earlier amendments as agreed upon by the FAA.

If the Administrator finds that the applicable airworthiness regulations (e.g., 14 CFR part 25) do not contain adequate or appropriate safety standards for the Boeing Model 777-200/-200LR/-300/-300ER series airplanes because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the applicant apply for a supplemental type certificate to modify any other model included on the same type certificate to incorporate the same novel or unusual design feature, these special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, the Boeing Model 777-200/-200LR/-300/-300ER series airplanes must comply with the fuel

vent and exhaust emission requirements of 14 CFR part 34 and the noise certification requirements of 14 CFR part 36.

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with § 11.38, and they become part of the type certification basis under § 21.101.

### **Novel or Unusual Design Feature**

The Boeing Model 777-200/-200LR/-300/-300ER series airplanes will incorporate the following novel or unusual design feature:

A digital systems architecture for the installation of a system with wireless network and hosted application functionality that allows access from external sources to the airplane's internal electronic components.

### **Discussion**

The digital systems architecture for the installation of an Avionics avWIFI system with wireless network and hosted application functionality on these Boeing model 777 airplanes is a novel or unusual design feature for transport-category airplanes because it is composed of several connected networks. This proposed network architecture is used for a diverse set of airplane functions, including:

- flight-safety related control and navigation systems
- airline business and administrative support
- passenger entertainment, and
- access by systems external to the airplane.

The airplane-control domain and airline information-services domain of these networks perform functions required for the safe operation and maintenance of the airplane. Previously, these domains had very limited connectivity with external network sources. This network architecture creates a potential for unauthorized persons to access the airplane-control domain and airline information-services domain from sources

external to the airplane, and presents security vulnerabilities related to the introduction of computer viruses and worms, user errors, and intentional sabotage of airplane electronic assets (networks, systems, and databases) critical to the safety and maintenance of the airplane.

The existing FAA regulations did not anticipate these networked airplane system architectures. Furthermore, these regulations and the current guidance material do not address potential security vulnerabilities, which could be exploited by unauthorized access to airplane networks, data buses, and servers. Therefore, these special conditions ensure that the security (i.e., confidentiality, integrity, and availability) of airplane systems will not be compromised by unauthorized wired or wireless electronic connections. This includes ensuring that the security of the airplane's systems is not compromised during maintenance of the airplane's electronic systems. These special conditions also require the applicant to provide appropriate instructions to the operator to maintain all electronic-system safeguards that have been implemented as part of the original network design so that this feature does not allow or reintroduce security threats.

These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

### **Applicability**

As discussed above, these special conditions are applicable to the Boeing Model 777-200/-200LR/-300/-300ER series airplanes. Should Archeion apply at a later date for a supplemental type certificate to modify any other model included on Type Certificate No. T00001SE to incorporate the same novel or unusual design feature, these special conditions would apply to that model as well.

### **Conclusion**

This action affects only a certain novel or unusual design features on one model series of airplanes. It is not a rule of general applicability and affects only the applicant.

## **List of Subjects in 14 CFR Part 25**

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

### **Authority Citation**

The authority citation for these special conditions is as follows:

**Authority:** 49 U.S.C. 106(f), 106(g), 40113, 44701, 44702, 44704.

### **The Special Conditions**

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for Boeing Model 777-200/-200LR/-300/-300ER series airplanes, as modified by Archeion Holdings, LLC, for airplane electronic-system security protection from unauthorized external access.

- (a) The applicant must ensure airplane electronic-system security protection from access by unauthorized sources external to the airplane, including those possibly caused by maintenance activity.
- (b) The applicant must ensure that electronic-system security threats are identified and assessed, and that effective electronic-system security protection strategies are implemented to protect the airplane from all adverse impacts on safety, functionality, and continued airworthiness.

- (c) The applicant must establish appropriate procedures to allow the operator to ensure that continued airworthiness of the airplane is maintained, including all post-type-certification modifications that may have an impact on the approved electronic-system security safeguards.

Issued in Des Moines, Washington, on July 7, 2021.

Mary A. Schooley,  
Acting Manager, Technical Innovation Policy Branch,  
Policy and Innovation Division,  
Aircraft Certification Service.  
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